

Application No. 10/582,700
Reply To Office Action Dated April 16, 2008
Response Dated July 16, 2008

Amendments to the Drawings:

The attached sheets of drawings include changes to Figures 1, 2, and 3. These sheets, which include Figures 1, 2, and 3, replace the original sheets including Figures 1, 2, and 3.

Attachment: Replacement Sheets

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REMARKS

I. STATUS OF THE PENDING CLAIMS AND THE REJECTIONS

As filed, this application included claims 1-24. All 24 of the original claims remain in this application.

Applicant notes that the Office Action acknowledges the claim for foreign priority under Section 119, and that all certified copies of priority documents have been received in this U.S. national stage application.

The Office Action identifies several objections to the drawings based on 37 C.F.R. 1.83(a). The drawings have been corrected and/or the claims have been amended to address this objection. Where applicable, replacement drawings are included with this response.

Applicant traverses the assertion on page 2 of the Office Action, that reference number 46 is not mentioned in the specification. This assertion is incorrect. This reference number is mentioned in the specification on page 7, line 32, which refers to “an insulation layer 46. . .”

Each of claims 1-24 was objected to under Section 112 for alleged indefiniteness. Specifically, the Office Action refers to claims 1 and 16, and the phrase “for warm waste air which originates from the cooling of the aircraft’s electronic equipment.” The Office Action also cites

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the word "preferably" in claim 17. Each of these claims has been amended in a manner which overcomes this objection.

The Office Action identifies eight specific substantive rejections. These rejections are listed below, by number.

- 1) Claims 1, 2, 4, 9, 14, and 15 stand rejected for alleged lack of novelty, under § 102(b), based on Becker U.S. Patent No. 2, 779,481 ("Becker '481"). (But claim 5 is also described in the body of this rejection.)
- 2) Claims 1, 2, and 13 stand rejected for alleged lack of novelty, under § 102(b), based on Goode U.S. Patent No. 3,203,473 ("Goode '473").
- 3) Claims 3, 5, 16-20, and 24 stand rejected for alleged obviousness, under § 103, based on the combination of Becker '481 and Severson U.S. Patent No. 5,701,755 ("Severson '755").
- 4) Claims 6, 8, and 21 stand rejected for alleged obviousness, under § 103, based on a combination of Becker, '481, Goode '473 and Monfraix U.S. Patent No. 6,058,725 ("Monfraix '725").
- 5) Claim 22 stands rejected for alleged obviousness, under § 103, based on a combination of Becker '481, Severson '755, and Monfraix '725, and further in view of Goode '473 and Shah U.S. Patent No. 3, 981,466 ("Shah '466"). (This rejection also includes an error, because it cites Becker, Severson and Monfraix "as applied to claims 16 and 19 above," yet this three-patent combination was not previously cited against claims 16 and 19.)
- 6) Claims 6, 7, and 8 stand rejected for alleged obviousness, under § 103, based on a combination of Becker '481 and Shah '466.
- 7) Claims 10, 11, and 12 stand rejected for obviousness, under § 103, based on Becker '481 in view of Stanzel U.S. Patent No. 4,733,057 ("Stanzel '057") and Meisiek U.S. Patent No. 6,611,659 ("Meisiek '659").
- 8) And finally, claim 23 stands rejected for alleged obviousness, under § 103, based on a combination of Becker '481 and Severson '755, as applied to claim 16 above (see rejection 3), and further in view of Stanzel '057 and Meisiek '659.

Applicant respectfully traverses these rejections. Nonetheless, based on the amendments to the claims and these remarks, applicant respectfully requests reconsideration of the patentability of all pending claims 1-24.

II. BECKER '481 DOES NOT ANTICIPATE ANY OF CLAIMS 1, 2, 4, 9, 14, OR 15

Claim 1 is an independent claim, and each of claims 2, 4, 9, 14, and 15 depends on independent claim 1, either directly or indirectly. Becker '481 does not anticipate any of these claims.

More particularly, independent claim 1 is directed to structure or apparatus for floor heating for an aircraft. Claim 1 includes numerous references to an aircraft, both in the preamble and after the open ended term "comprising." This claim language, and a common sense interpretation of claim 1, leads to the clear conclusion that this claim focuses on an aircraft.

In contrast, Becker '481 is directed to a unit for heating the floor of a house trailer, or truck trailer, or an automobile, or other type of floor structure. Becker '481 does not disclose an aircraft. This reason alone is sufficient to defeat this rejection.

Also, claim 1 describes a floor 20 made of a heatable panels 18, the panels defining a plurality of first hollow chambers, each of the chambers being enclosed between first and second ends thereof. Claim 1 refers to the aircraft's electronic equipment. Becker '481 does not disclose electronic equipment that needs to be cooled, or warm waste air that originates from the cooling of such electronic equipment.

In essence, Becker '481 discloses a heating tube 35 held within a channel 22 formed in a recessed floor panel 10, with a cover panel 28 mountable thereover. Thus, in addition to not disclosing any electronic equipment, Becker '481 fails to disclose any operative connection

between the tubes 35 and any electronic equipment. These deficiencies in Becker '481 are also sufficient to overcome this rejection.

Still further, claim 1 recites a feed line 28 which operatively connects to the first ends of the first hollow chambers, for supplying to the first hollow chambers the warm waste air that originates from the cooling of the aircraft's electronic equipment located at the fore end of the aircraft.

Clearly, Becker '481 does not anticipate claim 1. Moreover, each of dependent claims 2, 4, 9, 14, and 15 includes all of the features described above with respect to claim 1, and also one or more additional features. For the same reasons set forth above with respect to claim 1, and further because Becker '481 does not disclose the combination of features recited in any of these particular dependent claims, applicant respectfully asserts that the rejection of these dependent claims based on Becker '481 is also improper. Applicant respectfully requests that it be withdrawn.

III. GOODE '473 DOES NOT ANTICIPATE ANY OF CLAIMS 1, 2, OR 13

Goode '473 is directed to an aircraft heating system that uses the hollow space below the floor of the aircraft. But the aircraft heating system of Goode '473 differs substantially from claim 1. More specifically, Goode '473 discloses a heating system whereby warm air is supplied to a hollow space 16 under an aircraft floor 14 via a plurality of nozzles 18 that extend along the length of the aircraft. This warm air supplied to the hollow space 16 is able to flow, via side vents 21 (shown by directional flow arrows 21a, in Fig 2 of Goode '473) into the cabin of the aircraft.

In contrast, claim 1 describes a floor made of heatable panels, the panels defining a plurality of first hollow chambers that are enclosed, except at their first and second ends. Thus,

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Goode '473 does not disclose hollow chambers of the type described in claim 1. The hollow chambers of claim 1 are not in fluid communication with the cabin. Clearly, Goode '473 does not teach the heatable panels 18 nor the first hollow chambers 26 described in claim 1.

Moreover, Goode '473 does not disclose the feed line recited in claim 1, which operatively connects the first ends of the first hollow chambers 26 to the supply of warm air that originates from the cooling of the aircraft's electronic equipment. Instead, Goode '473 discloses the use of warm air that originates from the power plant of the aircraft.

Simply stated, claim 1 structurally differs from Goode '473. Goode '473 is not a proper basis for an anticipation rejection of claim 1. For these reasons, applicant respectfully asserts that this rejection of claim 1 be withdrawn.

Moreover, claims 2 and 13 depend on claim 1, either directly or indirectly. For substantially the same reasons set forth above, and further because Goode '473 does not disclose the combination of features recited in either of claims 2 or 13, applicant respectfully asserts that the Section 102 rejection of these dependent claims based on Goode '473 is equally improper and should be withdrawn.

IV. THE OTHER PRIOR ART COMBINATIONS DO NOT RENDER OBVIOUS THE REJECTED CLAIMS

A. The Claimed Subject Matter

As noted above, independent claim 1 describes structure for heating the floor of an aircraft. Because of the direct contact between the floor and the aircraft's outer skin, heat is lost from the cabin area to the outer skin of the aircraft. When the outside temperature is cold, as occurs with normal flight altitudes, or when the aircraft is on the ground during cold weather, heat

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loss causes the floor of the aircraft to cool down. For passenger aircraft, the passengers' feet can get cold. For freight aircraft, ice can form on the floor. Heating mats can be used to mitigate this problem. However, such heating mats require significant electrical power, power that much be generated in the aircraft. Such power usage increases the aircraft's fuel consumption.

The claimed invention solves this heat loss problem by using the warm air that is typically used to cool electrical components located in the avionic space, at the fore end of the aircraft. Claim 1 describes structural components which use this warmed air, including heatable panels that define a plurality of first hollow chambers, and a feed line that operatively connects to the first ends of the first hollow chambers so as to supply to these chambers the warm waste air that originates from the cooling of the aircraft's electronic equipment.

Independent claim 16 is a method claim based generally on the same principles, namely that of conveying warm waste air through a first plurality of hollow chambers defined by panels formed in the floor of an aircraft, wherein the warm waste air originates from the cooling of electronic equipment of the aircraft. The various dependent claims, namely claims 2-15 and 17-24, recite additional features in combination with the structure or method described in either independent claim 1 or 16.

B. The Claims Differ From The Cited Prior Art

For the reasons explained above in Sections II and III, the present claims differ from the disclosures of Becker '481 and Goode '473. Neither of these references forms the proper basis for a Section 102 rejection. Moreover, neither Becker '481 nor Goode '473 is properly combinable with any of the other cited prior art references, in order to achieve the invention as claimed.

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For example, neither of these two primary references, nor the additional cited prior art, includes any teaching, suggestion, or motivation for making the various combinations set forth in the Office Action. And even more generally, the Office Action fails to specify an objective reason for making the combinations of prior art references that are relied upon in the six different Section 103 rejections.

Applicant respectfully asserts the impropriety of the Section 103 rejection of claims 3, 5, 16-20, and 24 based on the alleged combination of Becker '481 and Severson '755. More specifically, the Office Action cites the Severson '755 for its teachings related to the cooling of sensitive electronics components within an aircraft, and the dumping of waste air from such components into the cabin of the aircraft.

The Office Action asserts that it would have been obvious to use the hot air from Severson '755 in the panels of Becker for the purpose of heating a floor. Applicant disagrees.

Severson '755 discloses a system that uses cabin exhaust air to assist in providing energy recovery and effective heat removal from electronics systems employed in an aircraft. Severson '755 uses a conventional environmental control system 42 which introduces fresh air into the cabin 10 at a desired pressure and temperature and typically provides for some recirculation of the cabin air. Severson '755 routes this exhaust air stream to the turbine 16. The claims of Severson '755 recite a turbine wheel connected to the cabin of an aircraft to receive pressurized air therefrom and to be driven thereby.

The combination asserted in the Office Action, i.e. to use the hot air from Severson in the panels of Becker, is flawed because doing so would defeat the intended purpose, and the claimed invention, of Severson '755. The Office Action fails to supply an objective reason for

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reconstructing Severson '755 in the manner suggested, in order to achieve the invention as set forth in these rejected claims. For these reasons, the rejection is improper and should be withdrawn.

As to the Section 103 of claims 6, 8, and 21, based on a purported combination of Becker '481, Goode '473, and Monfraix '725, applicant respectfully asserts that Becker '481 and Goode '473 are not themselves combinable. Becker '481 discloses heating via tubes 35 which have no openings, while Goode '473 discloses multiple ports for supplying warming air into the space below an aircraft floor, and for venting the air outwardly into the aircraft cabin. Based on common sense, a person of ordinary skill in the art would not combine these two references, because use of the tubes 35 from Becker '481 would reduce the supply of air into the aircraft cabin in Goode '473, thus rendering Goode '473 inoperable. This deficiency is sufficient to overcome this rejection.

Moreover, Monfraix '725 discloses an aircraft hot air supply system. According to the Office Action, Monfraix '725 teaches a method of hot air supply wherein hot bleed air is mixed with cold ram air, to heat an aircraft to a desired temperature. But there is no objective basis for combining Monfraix '725 with both of the primary references. And even if combined, the resultant structure would suffer from the some deficiencies described above as to Becker '481 and Goode '473.

This asserted combination of these three references reflects that these various Section 103 rejections rely upon a hindsight reconstruction of the prior art, based on a reading of the present application. Such a practice is improper, absent some objective reason for making the relied-upon combination. Here, no such objective reason exists.

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The rejection of claim 22, based on a purported combination of Becker '481 and Severson '755 is deficient for the same reasons stated above with respect to the prior rejection. Moreover the purported combination of these two patents with Goode '473 and Shah '466 is equally implausible. As stated above, Becker '481 and Goode '473 are not themselves combinable. Moreover, including Severson '755 with Becker '481 would defeat the stated purpose of Severson '755.

The teachings of Shah '466 do not correct these fatal deficiencies. For instance, Shah '466 discloses an integrated thermal anti-icing and environmental control system. It does not relate to heating the floor of an aircraft, nor the energy savings that results from using warm waste air that originates from the cooling of an aircraft's electronic equipment. Applicant respectfully asserts that this rejection of claim 22 is deficient, and should be withdrawn.

The rejection of claims 6-8 based on a purported combination of Becker '481 and Shah '466 is improper, and should be withdrawn. Section II, above, describes the deficiencies of Becker '481. The Office Action cites Shah for the teaching of primary and secondary feed lines for hot engine bleed air to an environmental control system. However, this teaching is insufficient for correcting the deficiencies described above with respect to Becker '481. Applicant respectfully disagrees with the assertion that a person of ordinary skill in the art would combine all of these references in the manner suggested. Applicant respectfully requests that this rejection be withdrawn.

The rejection of claims 10, 11, and 12 for alleged obviousness under Section 103 based on the purported combination of Becker '481, Stanzel '057, and Meisiek '659 is equally deficient. First of all, the Office Action reflects an interpretation of Becker '481 that differs from the

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interpretation used in the other rejections. More particularly, with this rejection the Office Action asserts that Becker '481 has additional chambers, as reflected by arrows 17 in Fig 1 of Becker '481. This is pure conjecture. These so-called additional chambers 17 are not in fluid connection with the tubes 35 that are asserted to be hollow chambers in the other purported combinations.

This inconsistent treatment and interpretation of Becker '481 demonstrates that this collection of Section 103 rejections is based on a selective and arbitrary reconstruction of the prior art.

Stanzel '057 is directed to a sheet heater that may be used in a wall, a floor, or a ceiling. It does not disclose hollow chambers 26 of the type recited in the claims, nor a feed line connecting the hollow chambers with a source of warm waste air in an aircraft. Meisiek is cited for the purported teaching of an electric heating mat for installation in the floor of an aircraft. But Meisiek does not cure the other deficiencies. Applicant respectfully asserts that this rejection is improper, and should be withdrawn.

Finally, claim 23 was rejected based for alleged obviousness under Section 103 based on purported combination of Becker '481, Severson '755, Stanzel '057, and Meisiek '659. For substantially the same reasons stated above with respect to deficiencies of Becker '481, and the uncombinability of Becker '481 and Severson '755, applicant respectfully asserts that this rejection is improper and should be withdrawn.

In summary, all the cited references differ from the subject matter claimed. Applicant respectfully asserts that a person of ordinary skill in the art would not combine the cited references in the manners suggested, to achieve the claimed subject matter. But perhaps even more importantly, even if one or more of such combinations were made, each of the resulting

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hypothetical combinations would still be deficient, primarily because of the differences between the subject matter claimed and the structures disclosed in Becker '481 and Goode '473.

C. The Claims Patentably Distinguish Over The Cited Prior Art

Applicant respectfully asserts that all pending claims patentably define over the cited prior art. For the reasons stated above, neither Becker '481 nor Goode '473 can serve as a proper basis for a Section 102 rejection of any of the pending claims. Moreover, neither of the two primary references can serve as a proper basis for supporting a Section 103 objection of any the claims. There is no objective reason in this record for a person of ordinary skill in the art to modify either of the two patents, or to combine them, to achieve the invention as recited in any of the rejected claims.

Moreover, there is no objective reason for a person of ordinary skill in the art to combine the various cited references in the manner suggested in the Office Action, so as to achieve the subject matter recited in the rejected claims. In fact, applicant respectfully asserts that the proposed combinations are contrary to common sense. For all these reasons, applicant respectfully asserts that the remaining claims patentably define over the cited prior art.

V. CONCLUSION

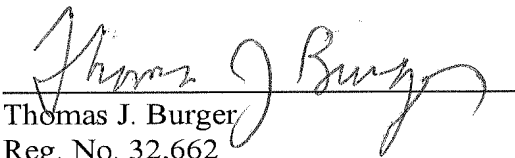
Based on the amendments to the specification and the claims, and these Remarks, applicant respectfully submits that all presently-pending claims are patentable and should be allowed without delay.

Applicant does not believe that any fee is due in connection with this submission. However, if any fees are necessary to complete this communication, the Commissioner may

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consider this to be a request for such and charge any necessary fees to Deposit Account No.
23-3000.

Respectfully submitted,


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